



Atty Dkt 2300-1591  
PP01591.101  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

GRANDI et al.

Confirmation No.: 4170

Serial No.: 09/914,454

Group Art Unit: Unassigned

Filing Date: February 9, 2000

Examiner: Unassigned

Title: ENHANCEMENT OF BACTERICIDAL ACTIVITY OF NEISSERIA  
ANTIGENS WITH OLIGONUCLEOTIDES CONTAINING CG MOTIFS

**INFORMATION DISCLOSURE STATEMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:


The information listed on the attached PTO-1449 form was cited in an International (PCT) Search Report dated 4 October 2000, in a PCT application corresponding to the above-identified U.S. application. A copy of the Search Report, including an indication of the purported relevance of the cited documents, is enclosed herewith. Copies of the information not previously cited to the Examiner, and a completed PTO-1449 form, are also submitted herewith. The Examiner is requested to make this information of official record in the application.

This Information Disclosure Statement is not to be construed as a representation that: (i) additional information material to the examination of this application does not exist; (ii)

the information, protocols, results and the like reported by third parties are accurate or enabling;  
or (iii) the above information constitutes prior art to the subject invention.

Respectfully submitted,

Date: 12/12/02

By:   
Roberta L. Robins  
Registration No. 33,208

Chiron Corporation  
Intellectual Property - R440  
P.O. Box 8097  
Emeryville, CA 94662-8097  
Telephone: (650) 325-7812  
Facsimile: (650) 325-7823



Atty Dkt No. 2300-1591  
PP01591.101

COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)  
Sheet 1 of 4

In the Application of GRANDI et al.

Serial No.: 09/914,454

Art Unit: Unassigned

Filed: February 9, 2000

Examiner: Unassigned

Title: ENHANCEMENTS OF BACTERICIDAL ACTIVITY OF NEISSERIA ANTIGENS WITH  
OLIGONUCLEOTIDES CONTAINING CG MOTIFS

U.S. PATENT DOCUMENTS

Exam. Init.	Ref. Desig.	Document No.	Date	Name	Class	Sub Class	Filing Date
	A1						

FOREIGN PATENT DOCUMENTS

Exam. Init.	Ref. Desig.	Document No.	Publication Date	Country or Patent Office	Class	Sub Class	Translation YES NO	
	B1	WO 96/02555	1 February 1996	PCT				
	B2	WO 98/16247	23 April 1998	PCT				
	B3	WO 98/18810	7 May 1998	PCT				
	B4	WO 98/18810	7 May 1998 (corrected version)	PCT				
	B5	WO 98/37919	3 September 1998	PCT				
	B6	WO 98/40100	17 September 1998	PCT				
	B7	WO 98/49288	5 November 1998	PCT				
	B8	WO 98/52581	26 November 1998	PCT				
	B9	WO 98/55495	10 December 1998	PCT				

Examiner:

Date Considered:

EXAMINER: Initial if citation considered whether or not the citation conforms with MPEP609. Draw a line through the citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Atty Dkt No. 2300-1591  
PP01591.101

COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)  
Sheet 2 of 4

In the Application of GRANDI et al.

Serial No.: 09/914,454

Art Unit: Unassigned

Filed: February 9, 2000

Examiner: Unassigned

Title: ENHANCEMENTS OF BACTERICIDAL ACTIVITY OF NEISSERIA ANTIGENS WITH  
OLIGONUCLEOTIDES CONTAINING CG MOTIFS

	B10	WO 99/57280	11 November 1999	PCT				
	B11	WO 99/58683	18 November 1999	PCT				

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

Exam. Init.	Ref. Desig.	Description
	C1	Ballas et al., "Induction of NK Activity in Murine and Human Cells by CpG Motifs in Oligodeoxynucleotides and Bacterial DNA," <i>J. Immunol.</i> , <u>157</u> :1840-1845 (1996)
	C2	Bird, "CpG Islands As Gene Markers In The Vertebrate Nucleus," <i>Trends Genet.</i> , <u>3</u> :342-347 (1987)
	C3	Chu et al., "CpG Oligodeoxynucleotides Act As Adjuvants That Switch On T Helper 1 (Th1) Immunity," <i>J. Exp. Med.</i> , <u>186</u> :1623-1631 (1997)
	C4	Cowdery et al., "Bacterial DNA Induces NK Cells to Produce IFN- $\gamma$ In Vivo and Increases the Toxicity of Lipopolysaccharides," <i>J. Immunol.</i> , <u>156</u> :4570-4575 (1996)
	C5	Davis et al., "CpG DNA Is a Potent Enhancer of Specific Immunity in Mice Immunized with Recombinant Hepatitis B Surface Antigen," <i>J. Immunol.</i> , <u>160</u> :870-876 (1998)
	C6	Halpern et al., "Bacterial DNA Induces Murine Interferon- $\gamma$ Production by Stimulation of Interleukin-12 and Tumor Necrosis Factor- $\alpha$ ," <i>Cell. Immunol.</i> , <u>167</u> :72-78 (1996)

Examiner:

Date Considered:

EXAMINER: Initial if citation considered whether or not the citation conforms with MPEP609. Draw a line through the citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Atty Dkt No. 2300-1591  
PP01591.101

COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)  
Sheet 3 of 4

In the Application of GRANDI et al.

Serial No.: 09/914,454

Art Unit: Unassigned

Filed: February 9, 2000

Examiner: Unassigned

Title: ENHANCEMENTS OF BACTERICIDAL ACTIVITY OF NEISSERIA ANTIGENS WITH  
OLIGONUCLEOTIDES CONTAINING CG MOTIFS

Exam. Init.	Ref. Desig.	Description
	C7	Klinman et al, "CpG motifs present in bacterial DNA rapidly induce lymphocytes to secrete interleukin 6, interleukin 12, and interferon $\gamma$ ," <i>Proc. Natl. Acad. Sci. USA</i> , <u>93</u> :2879-2883 (1996)
	C8	Krieg et al., "CpG motifs in bacterial DNA trigger direct B-cell activation," <i>Nature</i> , <u>374</u> :546-549, (1995)
	C9	Lipford et al, "CpG-containing synthetic oligonucleotides promote B and Cytotoxic T cell responses to protein antigen: a new class of vaccine adjuvants," <i>Eur. J. Immunol.</i> , <u>27</u> :2340-2344 (1997)
	C10	Messina et al, "Stimulation of In Vitro Murine Lymphocyte Proliferation by Bacterial DNA," <i>J. Immunol.</i> , <u>147</u> :1759-1764 (1991)
	C11	Millan et al., "CpG DNA can induce strong Th1 humoral and cell-mediated immune responses against hepatitis B surface antigen in young mice," <i>Proc. Natl. Acad. Sci.</i> , <u>95</u> :15553-15558 (1998).
	C12	Moldoveanu et al, "CpG DNA, a novel immune enhancer for systemic and mucosal immunization with influenza virus," <i>Vaccine</i> , <u>16</u> :1216-1224 (1998)
	C13	Roman et al., "Immunostimulatory DNA sequences function as T helper-1-promoting adjuvants," <i>Nat. Med.</i> , <u>3</u> :849-854 (1997)
	C14	Stacey et al., "Macrophages Ingest and Are Activated by Bacterial DNA," <i>J. Immunol.</i> , <u>157</u> :2116-2122 (1996)
	C15	Sun et al., "DNA as an Adjuvant: Capacity of Insect DNA and Synthetic Oligodeoxynucleotides to Augment T Cell Responses to Specific Antigen," <i>J. Exp. Med.</i> , <u>187</u> :1145-1150,(1998).

Examiner:

Date Considered:

EXAMINER: Initial if citation considered whether or not the citation conforms with MPEP609. Draw a line through the citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Atty Dkt No. 2300-1591  
PP01591.101

COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)  
Sheet 4 of 4

In the Application of GRANDI et al.

Serial No.: 09/914,454

Art Unit: Unassigned

Filed: February 9, 2000

Examiner: Unassigned

Title: ENHANCEMENTS OF BACTERICIDAL ACTIVITY OF NEISSERIA ANTIGENS WITH  
OLIGONUCLEOTIDES CONTAINING CG MOTIFS

Exam. Init.	Ref. Desig.	Description
	C16	Weiner et al., "Immunostimulatory oligodeoxynucleotides containing the CpG motif are effective as immune adjuvants in tumor antigen immunization," <i>Proc. Natl. Acad. Sci. USA</i> , <u>94</u> :10833-10837 (1997)
	C17	Yamamoto et al., "In vitro Augmentation of Natural Killer Cell Activity and Production of Interferon- $\alpha/\beta$ and - $\gamma$ with Deoxyribonucleic Acid Fraction from <i>Mycobacterium bovis</i> BCG <i>Jpn. J. Cancer Res.</i> , <u>79</u> :866-873 (1988)
	C18	Yi et al., "CpG DNA Rescue of Murine B Lymphoma Cells from Anti-IgM-Induced Growth Arrest and Programmed Cell Death Is Associated with Increased Expression of c-myc and bcl-x <sub>L</sub> <sup>1,2</sup> ," <i>J. Immunol.</i> , <u>157</u> :4918-4925 (1996)
	C19	Yi et al., "CpG Motifs in Bacterial DNA Activate Leukocytes Through the pH-Dependent Generation of Reactive Oxygen Species," <i>J. Immunol.</i> , <u>160</u> :4755-4761 (1998)
	C20	Yi et al., "CpG Oligodeoxyribonucleotides Rescue Mature Spleen B Cells from Spontaneous Apoptosis and Promote Cell Cycle Entry," <i>J. Immunol.</i> , <u>160</u> :5898-5906 (1998)
	C21	Yi et al., "Rapid Immune Activation by CpG Motifs in Bacterial DNA," <i>J. Immunol.</i> , <u>157</u> :5394-5402 (1996)

Examiner:

Date Considered:

EXAMINER: Initial if citation considered whether or not the citation conforms with MPEP609. Draw a line through the citation if not in conformance and not considered. Include copy of this form with next communication to applicant.